

(No Model.)

J. D. SCHOFIELD.
ROLL FOR NAPPING OR OTHER MACHINES.

No. 455,729.

Patented July 7, 1891.

FIG. 1.

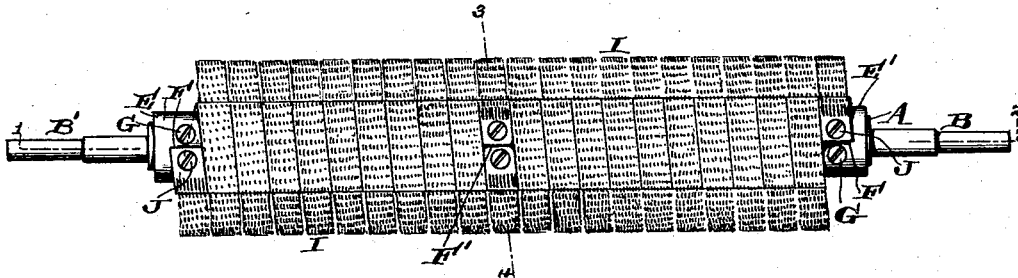


FIG. 2.

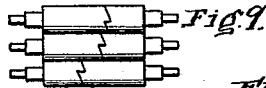
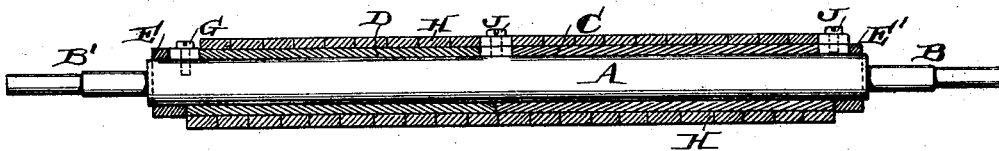


FIG. 5.

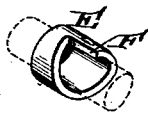


FIG. 3.

FIG. 4.

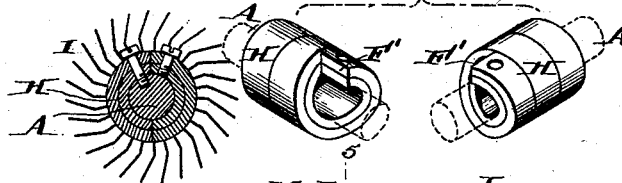
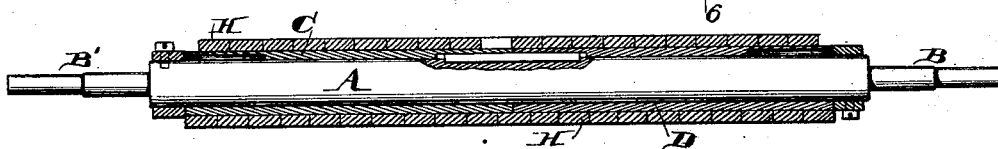


FIG. 8.



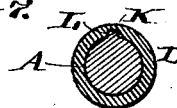
FIG. 6.



Witnesses:

Henry Dwyer
John L. Harvey

FIG. 7.



Inventor:

John Dolson Schofield
per George J. Buckley
his Atty.

UNITED STATES PATENT OFFICE.

JOHN DOBSON SCHOFIELD, OF PHILADELPHIA, PENNSYLVANIA.

ROLL FOR NAPPING OR OTHER MACHINES.

SPECIFICATION forming part of Letters Patent No. 455,729, dated July 7, 1891.

Application filed October 28, 1890. Serial No. 369,567. (No model.)

To all whom it may concern:

Be it known that I, JOHN DOBSON SCHOFIELD, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented a certain new and useful Improvement in Rolls for Napping and other Machines, of which the following is a description, reference being had to the annexed drawings, making part hereof.

10 The nature of my invention will fully appear from the following description and claims. Its object may be briefly stated as follows:

The rolls used to create a nap on woolen and cotton fabrics are mounted in the napping-machine and are of a length adapted to manipulate fabrics of the greatest width which are called for the ordinary demands of trade. Napping-machines are well known in the arts and require no special description here. 20 The rolls used for producing or throwing up the nap are also well known to those skilled in the art of manufacturing napped fabrics. While the napping-rolls are adapted to manipulate fabrics of great width, it frequently happens that the same machine is used to create a nap on goods of less width. The operative will almost invariably, to secure an even grasp of the points of the teeth or needles of the wire clothing upon the fabrics, 30 feed the narrow-width goods to the middle of the rolls. It thus frequently happens that the wire clothing near the ends of the rolls is disengaged and the main wear is thrown upon the middle of the roll. The middle of the roll thus becomes dulled and worn, while its end parts are sharp, and being comparatively unworn extend beyond the line of the middle part. Thus when subsequently a wider fabric is to be napped which will cover the whole 40 roll, or nearly so, the ends of the latter will tear the goods, while the rest or middle part of the roll will do but slight work in the napping. To avoid this the wire teeth will have to be ground at the ends to produce an even wearing-surface to accommodate the wide goods, and the whole of the wires will have to be sharpened evenly. In this way the wired surface by repeated grindings is worn away uselessly instead of being worn away only in the proper performance of its function. This grinding to even the surface in the ordinary 50 course of manufacture becomes necessary

for the reasons stated about every five or six weeks, and within that time, with the varying widths of cloth, the roll is doing more or less poor work. I obviate this defect by using 55 two tubes or sleeves upon a roller-shaft, the sleeves each covering one-half of the shaft, the joint between them being at or near the middle. At least the two sleeve-sections 60 cover the whole shaft, the joint being at some point between the ends, each sleeve having its separate armature of wire-cloth to make a whole roll-surface, whereby the wire-cloth which is at the ends for a period can be 65 changed to a middle position by drawing the tubes off the roll-shaft and reversing them, so that what was before their extreme ends meet in the middle and form the joint there. These sleeves can be keyed upon the shaft, 70 so as to be made to turn with it, or a clutch-joint can be used with set-screws, as shown. Each tube will form a section of the roll, and it is evident that the number of these roll or tubular sections can be increased to suit the 75 requirements of the work or the will of the operative. By these changes of position of the tubes an equalization of the wear is insured. Various methods of securing the tubes so as to insure their turning with the shaft 80 upon which they are mounted will suggest themselves to the mind of any skilled mechanic. Rolls are used for various purposes to which my invention can be applied where the wire-cloth covering is not employed, but 85 where the roll is liable to be overworked in one part.

It is evident that there is no necessity for making the tubes of even length, providing that they present a whole roll-surface. Therefore the joints between the tubes can be in the series "broken," whereby a joint between two tubes, which upon one roll would leave any part of the surface of the fabric being treated not acted upon, would have the inaction compensated for by the full surface of the next napping-roll, the joint between the tubes of which latter would break with the first-named joint. In the use of my improvement with calendar-rolls or rolls used to express moisture the tubes are used bare without clothing. The system can be used for "garneting-machines."

In the drawings, Figure 1 is a longitudinal

elevation of a napping-roll, a clutch-joint and set-screws being shown to insure the revolution of the roll with its shaft; Fig. 2, a similar view of the roll-shaft, showing the tubes and leather wrapping in longitudinal section on the line 1 2 of Fig. 1; Fig. 3, a vertical cross-section of Fig. 1 on the line 3 4 of the latter; Fig. 4, perspective views showing the clutch-joint connections of two tubes; Fig. 5, a similar view of a collar adapted to make a clutch-joint with one of the ends of a tube and pierced to receive a set-screw; Fig. 6, a view, partly in elevation and partly in longitudinal section, showing a feather or key on the shaft to insure the revolution of the tubes with it; Fig. 7, a cross-sectional view on the line 5 6 of Fig. 8, which latter shows a roll consisting of a shaft provided with a key or feather and reversible tubes, the latter being plain and free from wire clothing; Fig. 9, a series of the rolls shown in Fig. 8, showing "broken joints."

A is the roll-shaft; B B', the journals; C D, two roll-tubes adapted like sleeves to slide over the shaft and fit closely thereon.

E E' are short collars adapted to engage with the outer ends of the tubes C D by clutch-joints F F.

G G are set-screws piercing these collars and entering the shaft A, and thus insuring the turning of the tubes with the shaft.

F' is a clutch-joint between the adjoining inner ends of the tubes C D; H H, the leather or rubber clothing of the tube, in which is set the wire facing I I.

J J are screws securing the ends of the clothing to the tubes C D.

K is a key or feather on shaft A, engaging in grooves L L to insure the revolution of the tubes C D with the shaft. The key or feather may be used; but I prefer the system of clutch-joints, because if it is desired to use tubes of different lengths or three or more tubes on the shaft the clutch-joint is more convenient and is cheaper of construction. In such cases a very long key or feather would have to be used, thus necessitating very great care and circumspection in the construction and fitting.

My rolls can be used in series, and, as shown in Fig. 9, the points at which the unions of sleeve to sleeve are made in the middle can be made to break joint with the next roll of the series, whether the series consists of two or more rolls. The sleeve-section and its clothing, when my rolls are used for napping or garneting machines, are practicably one until the clothing is stripped off.

The wires of the napping-machine or the teeth of the garneting-machine constitute the wearing-surface of the roll and practically form part of the reversible sleeves.

What I claim as new is—

1. A napping-roll consisting of a middle shaft A, tubes or sleeves C D, meeting between the ends of the shaft and armed with wire

clothing set independently upon each sleeve, said sleeves being adapted to turn with said shaft and to be withdrawn from the same with their clothing and reversed, substantially as described.

2. A napping-roll consisting of a middle shaft A, tubes or sleeves C D, meeting between the ends of the shaft and provided at each end with a short spiral cut and shoulder, whereby either end of one sleeve is adapted to couple with either end of the other and to form a clutch-joint, said sleeves being adapted to revolve with the shaft and each provided with separate wire clothing and also adapted to be drawn off the shaft and reversed, substantially as described.

3. A roll consisting of a middle shaft A and several tubes or sleeves C D, meeting between the ends of the shaft and provided at each end with a short spiral cut and shoulder, whereby either end of one sleeve is adapted to couple with either end of the other and to form a clutch-joint, said sleeves being adapted to revolve with the shaft and each provided with separate wire clothing and also adapted to be drawn off the shaft and reversed, collars E E', the inner edges of which coincide with the spiral cut and shoulder of the sleeves, and screws J J, to secure the collars upon the shaft, substantially as described.

4. A roll consisting of a middle shaft and outer tubes or sleeves to cover the shaft, the said tubes meeting between the ends of the shaft, forming a joint and adapted to turn therewith, and also to be removed therefrom and reversed, whereby the wearing-surface of the rolls intermediate the ends can be changed at pleasure, substantially as described.

5. A series of rolls, each roll consisting of a middle shaft and outer tubes or sleeves to cover the shaft, the said tubes meeting between the ends of the shaft, forming a joint and adapted to turn therewith, and also to be removed therefrom and reversed, whereby the wearing-surface of the rolls intermediate the ends can be changed at pleasure, substantially as described.

6. A series of rolls, each roll consisting of a middle shaft and outer tubes or sleeves to cover the shaft, the said tubes meeting between the ends of the shaft, forming a joint and adapted to turn therewith, the joints of one wearing-surface of the roll "breaking" with the other, said sleeves also being adapted to be removed from the shaft and reversed, whereby the wearing-surface of the rolls intermediate the ends can be changed at pleasure, substantially as described.

In witness that the above is my invention I have hereunto set my hand.

JOHN DOBSON SCHOFIELD.

Witnesses:

GEORGE E. BUCKLEY,
JOHN L. HARVEY.